WHAT IS CLAIMED IS:

1. A monopartite viral vector, comprising:

modified tobravirus RNA-1 comprising an inserted foreign RNA sequence operably linked to the 3'-end of the stop codon of the RNA sequence that codes for a 16k Da cysteine-rich protein of RNA-1.

2. A bipartite RNA viral vector, comprising:

(a) modified tobravirus RNA-1 comprising an inserted foreign RNA sequence, operably linked to the 3'end of the stop codon of the RNA sequence that codes for a 16k Da cysteine-rich protein of RNA-1; and

(b) tobravirus RNA-2

3. A bipartite RNA viral vector, comprising:

(a) modified tobravirus RNA-1 comprising a first foreign RNA sequence, operably linked to 3'-end of the stop codon of the RNA sequence that codes for a 16k Da cysteine-rich protein of RNA-1;

(b) modified tobravirus RNA-2 comprising a promoter-gene construct, which comprises a subgenomic promoter operably linked to the 5' end of a second foreign RNA sequence, wherein said promoter-gene construct is inserted in place of the 2C gene.

4. A bipartite RNA viral vector, comprising:

(a) tobravirus RNA-1;

(b) modified tobravirus RNA-2; wherein said modified tobravirus RNA-2 comprises one or more promoter-gene constructs comprising a subgenomic promoter and a foreign RNA sequence, wherein said subgenomic promoter is operably linked to the 5' end of said foreign RNA sequence, and said promoter-gene construct is inserted in place of the 2c gene and without removal of the 2b gene of a tobravirus.

5. A bipartite RNA viral vector, according to Claim 4, wherein said modified tobravirus RNA-2 further comprises *Not* I, *Pst* I, and *Xho* sites.

6. The viral RNA vector according to any one of Claims 1-4, wherein the foreign RNA is either a complete open reading frame or a partial open reading frame.

7. The viral RNA vector according to any one of Claims 1-4, wherein the foreign RNA is in either a positive sense or an antisense orientation.

8. The RNA viral vector according to Claim 6, wherein said foreign RNA codes for part of a protein.

9. The RNA viral vector according to Claim 8, wherein said vector is a silencing vector.

10. The RNA viral vector according to Claim 6, wherein said foreign RNA codes for a protein.

11. The RNA viral vector according to Claim 10, wherein said vector is a silencing vector or an expression vector.

12. The RNA viral vector according to any one of Claims 1-4, wherein the foreign RNA sequence is obtained from any member of a library of RNA sequences taken from a eukaryotic or prokaryotic species.

13. The viral RNA vector according to Claim 6, wherein said foreign RNA encodes for all or part of a Nop 10-like small nucleolar ribonucleoprotein.

14. The viral RNA vector according to Claim 6, wherein said foreign RNA encodes for all or part of aDEAD box RNA helicase.

15. The viral RNA vector according to Claim 6, wherein said foreign RNA encodes for all or part of putrescine N-methyltransferase.

16. The viral RNA vector according to Claim 6, wherein said foreign RNA encodes for all or part of methionine synthase.

17. The viral RNA vector according to Claim 6, wherein said foreign RNA encodes for all or part of a PRP 19-like spliceosomal protein.

18. The viral RNA vector according to Claim 6, wherein said foreign RNA encodes for all or part of a CRS2 protein.

19. The viral RNA vector according to Claim 6, wherein said foreign RNA encodes for all or part of a GTP-binding protein.

20. A method of expressing one or more foreign gene in a plant host, comprising:
infecting a plant host with the RNA viral vector of any one of Claims 1-4, whereby the foreign gene is expressed in the plant host.

21. The method according to Claim 20, furthering comprising allowing the viral vector to infect the plant systemically.

22. A method of silencing one or more plant host genes, comprising:
infecting a plant host with the RNA viral vector of Claims 1-4, whereby the expression of said foreign RNA sequence causes silencing of an endogenous plant host gene.

23. The method according to Claim 22, furthering comprising allowing the viral vector to infect the plant systemically.

24. A method of simultaneously silencing a plant host gene and expressing a foreign gene, comprising:

infecting a host with the bipartite RNA viral vector of Claim 3, whereby the first foreign RNA sequence causes silencing of an endogenous gene of a plant host, and the second foreign RNA is expressed in the plant host.

25. A method of simultaneously silencing a plant host gene and expressing a foreign gene, comprising:

infecting a host with the bipartite RNA viral vector of Claim 3; whereby the second foreign RNA sequence causes silencing of an endogenous gene of a plant host, and the first foreign RNA is expressed in the plant host.

26. A method of silencing one or more host genes, comprising:

infecting a host with the bipartite RNA viral vector of Claim 1; whereby both the first and the second foreign RNA sequence cause silencing of a host gene.

27. The method according to Claims 24, 25 or 26, furthering comprising allowing the viral vector to infect the plant systemically.

28. A method of silencing an endogenous gene in a plant host comprising the steps of: infecting a plant host with a bipartite RNA viral vector that comprises:

(a) tobravirus RNA-1;

(a) modified tobravirus RNA-2 that comprises a promoter-gene construct comprising a subgenomic promoter and a foreign RNA sequence that codes for all or part of a protein, wherein said subgenomic promoter is operably linked to the 5' end of said foreign RNA sequence, and said promoter-gene construct is inserted in place of the 2C gene of a tobravirus.

29. A method of altering an alkaloid content in a plant host comprising the steps of: infecting a plant host with a bipartite RNA viral vector that comprises:

(a) tobravirus RNA-1;

(b) modified tobravirus RNA-2 that comprises a promoter-gene construct comprising a subgenomic promoter and a foreign RNA sequence involved in the biosynthesis of alkaloids, wherein said subgenomic promoter is operably linked to the 5' end of said foreign RNA sequence, and said promoter-gene construct is inserted in place of the 2C gene of a tobravirus.

30. A method of altering an alkaloid content in a plant host comprising the steps of:

infecting a plant host with a RNA viral vector that comprises modified tobravirus RNA-1 comprising a foreign RNA sequence involved in the biosynthesis of alkaloids operably linked to the stop codon of the RNA sequence which codes for a 16k Da cysteine-rich protein of RNA-1.

31. A method according to Claims 29 or 30, wherein said foreign RNA gene encodes for all or part of putrescine N-methyltransferase.

32. A plant host infected by a viral RNA vector according to any one of Claims 1-4.

33. A plant host having an altered alkaloid content, wherein said plant host is prepared according to Claims 29 or 30.

34. A method of compiling a plant functional gene profile, comprising:

(a) preparing a library of DNA or RNA sequences from a donor plant, and constructing recombinant viral nucleic acids comprising an unidentified nucleic acid insert obtained from said library in either a positive sense or an antisense orientation, wherein said recombinant viral nucleic acids are obtained from a tobravirus;

(b) infecting a plant host with one or more said recombinant viral nucleic acids;

(c) transiently expressing said unidentified nucleic acid in the plant host;

(d) determining one or more phenotypic or biochemical changes in the plant host;

(e) identifying an associated trait relating to a phenotypic or biochemical change;

(f) identifying said recombinant viral nucleic acid that results in said one or more changes in the plant host;

(g) repeating steps (b) – (f) until at least one nucleic acid sequence associated with said trait is identified, whereby a functional gene profile of the plant host or of the plant donor is compiled.

35. A method of compiling a plant functional gene profile, comprising:

(a) preparing a library of DNA or RNA sequences from a donor plant, and constructing recombinant viral nucleic acids comprising an unidentified nucleic acid insert obtained from said library, wherein recombinant viral nucleic acids are obtained from a tobravirus;

(b) infecting a plant host with one or more said recombinant viral nucleic acids;

(c) transiently expressing said recombinant nucleic acid in the plant host;

(d) determining one or more changes in a phenotypic or biochemical trait in the plant host;

(e) identifying said recombinant viral nucleic acid that results in one or more changes in the plant host;

(f) determining the sequence of said unidentified nucleic acid insert; and

(g) repeating steps (b)–(f) until at least one nucleic acid sequence associated with said trait is identified, whereby a functional gene profile of the plant host or the plant donor is compiled.

36. A method of changing the phenotype or biochemistry of a plant host, comprising:

(a) infecting a plant host with the RNA viral vector any one of Claims 1-4,

(b) expressing transiently said foreign RNA sequence in said plant host; and

(c) changing one or more phenotypic or biochemical characteristics in said plant host; and

37. A method of determining the presence of a trait in a plant host, comprising:

(a) preparing a library of DNA and RNA sequences of a plant donor;

(b) constructing recombinant viral nucleic acids comprising an unidentified nucleic acid insert obtained from said library in an antisense or a positive sense orientation, wherein said recombinant viral nucleic acid are obtained from a tobravirus;

(c) infecting said plant host with one or more said recombinant viral

nucleic acids, and expressing transiently said unidentified nucleic acid in said plant host such that one or more phenotypic or biochemical changes occurs;

(d) determining one or more biochemical or phenotypic traits relating to said changes in said plant host; and

(e) comparing said one or more biochemical or phenotypic traits to a plant host that is uninfected.